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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,210	12/04/2003	David Herbert Roach	CL2248USNA	7968

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E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
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WILMINGTON, DE 19805

EXAMINER

SCHILLING, RICHARD L

ART UNIT	PAPER NUMBER
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1752

MAIL DATE	DELIVERY MODE
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06/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/728,210	Applicant(s) ROACH ET AL.	
	Examiner Richard L. Schilling	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7,14-24,42,45-51 and 67-109 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,14-24,42,45-51 and 67-109 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4-13-07, 16-26-06</u> | 6) <input type="checkbox"/> Other: _____ |

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4-13-07 has been entered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 7, 14-19, 82-85, 88, 89 and 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al. in view of Anderson et al. Imai et al. (paragraphs 9-16,38, 41-47,51-59) disclose positive working photoresist paste with 10-90% conductive particles. The photoresist compositions comprise photoacids and resins that

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are decomposed by the action of acid but specific acrylate resins as set forth in the instant claims are not disclosed. Anderson et al. (col. 2, line 7-col. 3, line 45) disclose acrylate resins with acid labile groups, within the scope of formulas I-III of the instant claims, as acid decomposable resins in positive working photoresists with photoacids. It would be obvious to one skilled in the art to use the acid sensitive resins of Anderson et al. as the generic resins of Imai et al. or to use the positive working photoacid photoresist compositions of Anderson et al. as the generic called for positive working, photoacid containing photoresist composition of Imai et al.

3. Claims 7, 14-19, 81, 83-85, 88, 89 and 91-96 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hattori et al. '483. Hattori et al. (paragraphs 25, 26, 31, 40, 41, 53, 58, 115 ; ex. 2) discloses positive photoresist compositions with photoacids and nanoparticles, e.g. carbon, metal, metal oxide, at 10-99%. In example 2, a positive photoresist resin of t-butyl acrylate polymer within the scope of formula III of the instant claims is set forth. If Hattori et al. do not anticipate the instant claims, then it would at least be obvious to one skilled in the art to use the disclosed t-butyl acrylate polymer positive photoresist compositions as the required photoresist composition binders for the nanoparticles, including the metals and metal oxides, of Hattori et al.

4. Claims 67-73, 75 and 78-81 are rejected under 35 U.S.C. 102(e) as being anticipated by Cernigliaro et al. Cernigliaro et al. (paragraphs 14, 20, 35-39, 43, 47, 51, 57, 65-70) disclose positive working photoresists with 10-90% nanoparticle sized filler particles for forming conductive patterns or field emission displays.

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5. Claims 7, 14-24, 67-73, 75-89, 91-96 and 98-103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cernigliaro et al. in view of Thackeray et al., Anderson et al. and Hanabata et al.'235. The positive photoresist compositions of Cernigliaro et al. containing fillers as set forth in paragraph 4 comprise photoacids and polymers with acid cleavable protective groups or novolak quinonediazide resins. Since Hatabata et al. (col. 1, lines 47- 55, col. 7, line 41- col. 8, line 10) discloses that known novolak resins as used in positive photoresists include novolak-diazonaphthoquinones, it would be obvious to one skilled in the to use novolak-diazonaphthoquinones as the called for novolak resins in the positive working photoresist compositions of Cernigliaro et al. It would be obvious to one skilled in the art to use the known acid labile protected acrylate polymers of Anderson et al (Col. 2, line 7-col.3, line 45) used in positive working photoresists as the called for acid labile protected polymers of the positive working photoresists of Cernigliaro et al. It would at least be obvious to one skilled in the art to use the acid labile protected branched alkyl acrylate polymers of Thackeray et al. (col.4, lines 17-50) used in positive photoresists as the called for protected polymers in Cernigliaro et al. since Cernigliaro et al. refers to Thackeray et al. as disclosing suitable polymers for their photoresist compositions.

6. Claims 50, 51, 67-74, 78-81 and 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouchard et al. in view of Imai et al and Cernigliaro et al.

Bouchard et al. (paragraphs 37,38,50,51 ; ex.15,24,25) disclose negative working photoresist materials containing particles, including metals and carbon nanotubes, for making electron field emitters by patterning using exposure. Since Imai

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et al. teaches using positive photoresists instead of negative photoresists for applying particles in patterns for better precision and Cernigliaro et al. disclose that either negative or positive working photoresists compositions may be used to apply the particle patterns, it would be obvious to one skilled in the art to use positive working photoresists instead of the specifically disclosed negative working photoresists in the photopatterning disclosed in Bouchard et al.

7. Claims 7, 14-24, 42, 45-51 and 67-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouchard et al. in view of Cengiliaro et al. and Imai et al. as applied in paragraph 6 above, and further in view of Anderson et al., Thackery et al. and Hanabata et al.'235. For the same reasons as set forth in paragraphs 2 and 5 above, it would be obvious to one skilled in the art to use the particular known positive working novolak photoresist polymers of Hanabata et al. as the polymers in the positive working photoresists of Cernigliaro et al., to use the protected acrylate polymers of Thackeray et al. or Anderson et al. as the polymers in Cernigliaro et al. and to use the polymers of Anderson et al. as the called for polymers in the positive working photoresists of Imai et al. wherein the said positive photoresists would be obvious to use for the photopatterning in Bouchard et al. as explained in paragraph 6 above.

8. Kato et al. is cited of interest as disclosing positive photoresists with conductive particles. The prior art cited by applicants has been considered.

Any inquiry concerning this communication should be directed to Richard L. Schilling at telephone number 571-272-1335.

RICHARD L. SCHILLING
PRIMARY EXAMINER
GROUP 1400-1752

